Ontario Waste Management Corporation

Industrial Waste Reduction

4Rs

Services to help industries manage hazardous wastes

REDUCE

REUSE

RECYCLE

RECOVER

MANAGING INDUSTRIAL WASTES

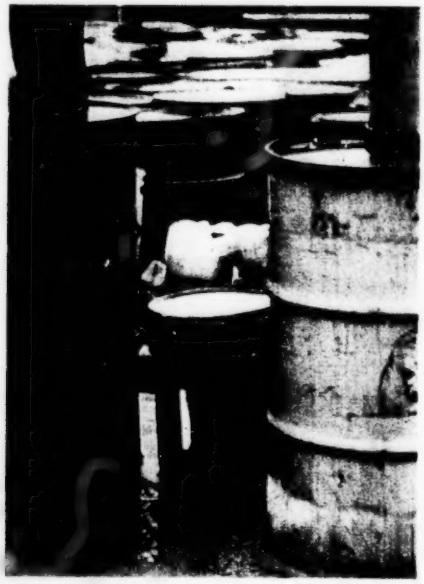
The Smart Way

Industrial wastes often contain substances that could contaminate the environment if they are not properly managed. Many of these wastes must be treated to reduce their toxicity before they are flushed down sewers or hauled away to landfills.

End-of-pipe treatment may enable a company to meet environmental regulations, but it is not necessarily the best way to manage hazardous wastes. A more effective approach is to reduce them at source by employing the 4Rs:

- Reduction
- Reuse
- Recycling
- Recovery

WHY REDUCE?



By practising the 4Rs, companies can greatly reduce the amount of waste they have to dispose of.

Many companies have greatly reduced their wastes by practising the 4Rs. The results have generally been large savings in the costs of production and waste treatment and disposal.

SIX GOOD REASONS TO REDUCE:

1. Savings in raw material costs
2. Savings in time and energy
3. Lower treatment and disposal costs
4. Less risk of liability
5. Improved corporate image
6. Less employee exposure to hazardous materials

GETTING STARTED

The Waste Audit

REDUCE
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The first step in any waste reduction program should be the plant survey or audit. The purposes of such an audit are to ascertain where wastes are being generated and possible ways that they can be eliminated, or at least reduced.

A waste audit can be a very complicated procedure involving stream sampling and detailed engineering analysis, or it can be a fairly simple plant survey. Simple or complicated, an audit should help you decide on the most cost-effective methods for reducing wastes in your plant.

The first step in any waste management program should be an audit of plant processes.

Lab analysis helps in determining how problem wastes can be reduced.

APPROACHES & TECHNIQUES

Although we talk about the 'hierarchy' of the 4Rs, in practice they are interrelated. You may decide, for example, that you can achieve the greatest waste reduction in your plant through a combination of reduction and recycling, or recovery and reuse.

1 REDUCTION

Source reduction is generally the most effective approach to waste reduction. Some of the options for reducing wastes at source are summarized below.

Powder coating generates very little waste and the overspray can be reused.

INVENTORY MANAGEMENT

- Record and account for all raw materials at every stage of handling and production.
- Consider purchasing chemicals in smaller amounts to avoid having to dispose of chemicals whose shelf life has expired.
- Where possible, find less hazardous substitutes for toxic materials.

IMPROVED OPERATIONS

- Train and motivate employees to make waste reduction part of their job.
- Improve material receiving, storage and handling practices to reduce losses.

EQUIPMENT MODIFICATIONS

- Install more efficient, less wasteful processing equipment, or improve the operating efficiency of existing equipment.
- Make changes that will facilitate waste recovery and recycling.

PROCESS CHANGES

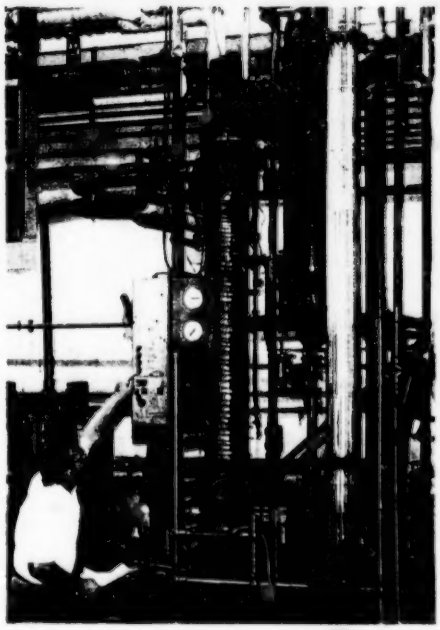
- Segregate hazardous from non-hazardous wastes, then separate them by type. Segregation makes waste handling, as well as recovery and recycling, easier and more economical.

OTHER REDUCTION TECHNIQUES:

- Eliminate leaks and spills.
- Recover and reuse in-plant spills and process wash waters.
- Optimize reactions and raw material use.
- Redesign or reformulate end products to be less hazardous.
- Introduce process controls to regulate plant systems.

2 REUSE

Your company could realize large cost savings by installing closed-loop systems so that solvents and other materials can be reused in plant processes.



An evaporator has made it possible for one automotive parts manufacturer to recover and reuse 95 percent of its chromic acid.

3 RECYCLING · WASTE EXCHANGE

One company's waste could be another company's feedstock. If you can't reuse a material in your plant, consider selling or giving it to another company or to a reclaimer.

Recycling can be a mutually profitable arrangement. The company getting rid of the waste is spared the cost of waste hauling and disposal, while the user saves on raw material costs.

A growing number of companies are turning to the Ontario Waste Exchange for help in recycling their wastes. The Exchange acts as an industrial matchmaker, searching out markets for waste materials and bringing together waste generators and users through listings in a bimonthly bulletin.

A great variety of wastes are recycled in this way. The Ontario Waste Exchange has found users for 300 kg of unused nitric acid, 37 tonnes of potassium hydroxide, two tonnes of unused asbestos, and four tonnes of latex materials, to give just a few examples.

To find out how the Ontario Waste Exchange can help you, call (416) 822-4111. Toll-free 1-800-268-5390

4 RECOVERY

Wastes generated by your company may contain precious metals, solvents or other substances that could be recovered and reused in your plant processes. Recovered materials might also be sold to another company or to a reclaimer.

Some metal finishing companies have installed electrolytic systems that recover a large percentage of the metal from concentrated rinse waters. The recovered metal is then sold to scrap metal dealers.

Some metal finishers are installing electrolytic systems to recover metals such as zinc and chrome from rinsewater.

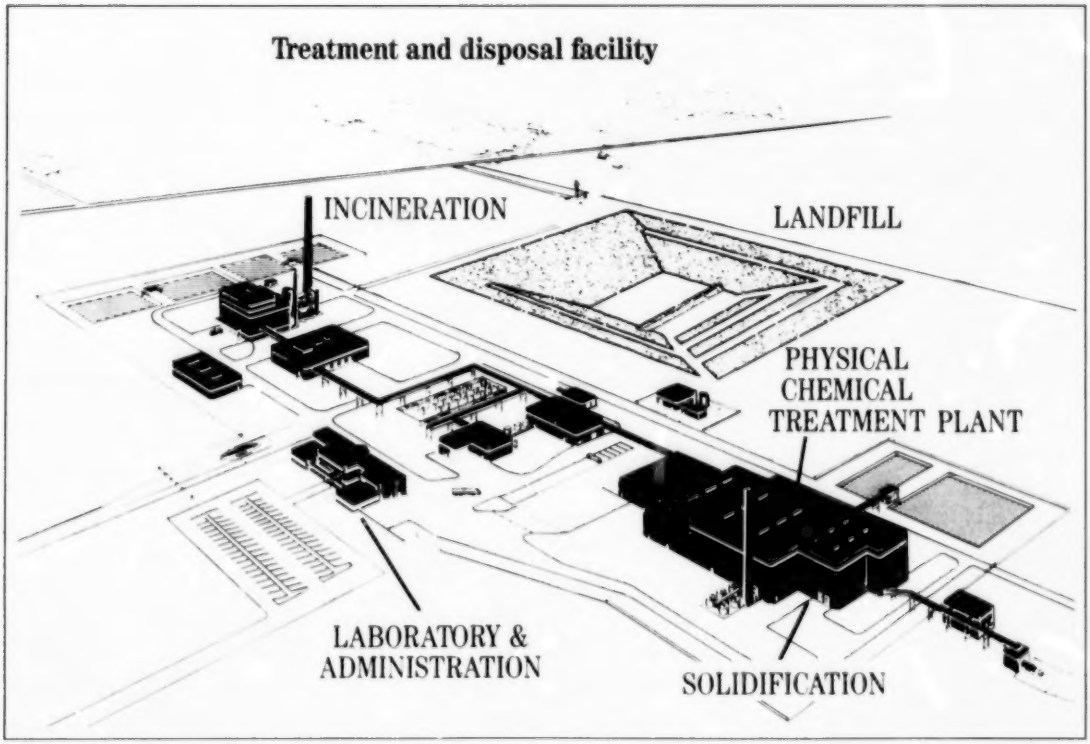
Treatment & Disposal

After eliminating all the wastes you can by practising the 4Rs, you may be left with some concentrated toxic residues. These residues must be treated and disposed of safely.

Ontario does not have the capability to properly manage all of the many types of industrial wastes generated in the province. To meet this obvious need, OWMC plans to build and operate an industrial waste treatment and disposal facility in the Niagara Region. OWMC's facility will be able to handle 150,000 tonnes of waste annually and can be expanded to 300,000 tonnes if necessary.

Most of the wastes sent to the facility are expected to be inorganic — mainly metals and their salts. These wastes will be detoxified through physical and chemical treatment. Organic wastes such as oils, plastics and PCBs will be destroyed in a rotary kiln incinerator. The residues from incineration and treatment will be solidified and deposited in an engineered landfill.

Treatment and disposal facility



How Can We Help?

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TECHNICAL ASSISTANCE

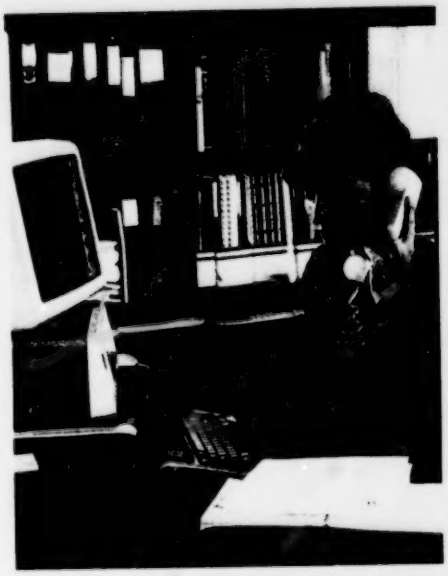
OWMC has helped many companies with their waste management problems. Our waste management specialists are knowledgeable in the latest waste reduction technologies and methods. Call them for advice and free on-site assessments.

LAB ANALYSIS

Before starting a waste reduction program, you will need to know what is in your wastes. Chemists at OWMC's Burlington laboratory can help by sampling and analyzing your waste streams. Call (416) 637-2452

PUBLICATIONS

Most registered waste generators in Ontario receive our newsletter, the *Waste Reduction Bulletin*. Read the *Bulletin* to find out how companies in your industry and others have succeeded in trimming their wastes. Our *Industrial Waste Audit and Reduction Manual* will help you get started. Written for Ontario manufacturers, the manual explains each step of the audit process, from appointing an audit team to analyzing the costs and benefits of different reduction techniques.



OWMC's waste management specialists offer free and confidential advice to industry.

INFORMATION SERVICE

Keep up with the latest developments in waste reduction in your industry. OWMC subscribes to technical information services in Canada and the United States and can provide you with abstracts of recently-published articles on request.

EMPLOYEE TRAINING

OWMC holds seminars and workshops across Ontario for employees with responsibilities for waste reduction. Videotapes are available on loan from our Toronto office.

FUNDING

In addition to its technical information and advisory services, OWMC funds the Ontario Waste Exchange and small-scale research projects to find simple, economical ways of reducing industrial wastes.

Find out how OWMC can help you.
Call or write:

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